

## The General Form of an equation of a circle.

$$Ax^2 + By^2 + Cx + Dy + E = 0$$

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## Factoring the general form

$$Ax^2 + By^2 + Cx + Dy + E = 0$$

$$Ax^2 + By^2 + Cx + Dy = -E$$

$$Ax^2 + Cx + \quad + By^2 + Dy + \quad = -E$$

Then factor the "x" and "y" terms  
using completing the square

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$$Ax^2 + Cx + \quad + By^2 + Dy + \quad = -E$$

$$4x^2 + 4y^2 - 16x - 24y + 51 = 0$$

$$4x^2 + 4y^2 - 16x - 24y = -51$$

$$4x^2 - 16x + \quad + 4y^2 - 24y + \quad = -51$$

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$$4x^2 - 16x + \quad + 4y^2 - 24y + \quad = -51$$

$$x^2 - 4x + \quad + y^2 - 6y + \quad = -51/4$$

$$(x^2 - 4x + \quad) + (y^2 - 6y + \quad) = -51/4$$

$$(x^2 - 4x + 4) + (y^2 - 6y + 9) = -51/4 + 4 + 9$$

$$(x - 2)^2 + (y - 3)^2 = -51/4 + 52/4$$

$$(x - 2)^2 + (y - 3)^2 = 1/4$$

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Find the center and radius of the circle with the following equation:

$$100x^2 + 100y^2 - 100x + 240y - 56 = 0$$

$$\left(x - \frac{1}{2}\right)^2 + \left(y - \left(-\frac{6}{5}\right)\right)^2 = \left(\frac{3}{2}\right)^2$$

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$$100x^2 + 100y^2 - 100x + 240y - 56 = 0$$

$$100x^2 + 100y^2 - 100x + 240y = 56$$

$$100x^2 - 100x + 100y^2 + 240y = 56$$

$$x^2 - x + y^2 + \frac{12}{5}y = \frac{14}{25}$$

$$\left(x^2 - x + \frac{1}{4}\right) + \left(y^2 + \frac{12}{5}y + \frac{36}{25}\right) = \frac{14}{25} + \frac{1}{4} + \frac{36}{25}$$

$$\left(x - \frac{1}{2}\right)^2 + \left(y + \frac{6}{5}\right)^2 = \frac{9}{4}$$

$$\left(x - \frac{1}{2}\right)^2 + \left(y - \left(-\frac{6}{5}\right)\right)^2 = \left(\frac{3}{2}\right)^2$$

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